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Experience in the mechanization of husking Indian corn.  
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BOLONI, Istvan

Testing tractor grass mowers with small cutting width.Pt.2.  
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1. Mezogazdasagi Gepkiserleti Intezet.

BOLONI, Istvan, dr., a muszaki tudományok kandidátusa

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BOLONIN, VASILII IVANOVICH AND M. F. TEPLIAKOV

Opyt otopeniia parovozov drovami. Moskva, Transzheldorizdat, 1943. 56 p. illus.

Using wood as locomotive fuel.

DLC: TJ648.B65

SO: Manufacturing and Mechanical Engineering in the Soviet Union, Library of Congress, 1953.

POGOSIANZ, H. E., BOLONIN, N. I. and OLSHEVSKAYA, L. V.

(Moscow)

BOLONINA, N. I.

"The Steppe-Lemming (*Lagurus lagurus* Pall): A New Animal Suitable for  
Cancer Research."

report presented at the 7th Intl. Cancer Congress, London, July 1958.

POGOSYANTS, Ye.Ye., BOLONINA, N.I.

Attempted demonstration of a tumor-producing agent in extracts of human mammary cancer. Vop.onk. 4 no.4:387-391 '58 (MIRA 11:9)

1. Iz laboratorii opukholevykh shtammov (zav. - doktor biol.nauk Ye.Ye. Pogosyants) otdela etiologii i patogenezha opukholey (zav deystv. chlen AMN SSSR prof. A.D. Timofeyevskiy) Instituta eksperimental'noy patalogii i terapii raka AMN SSSR (dir. chlen AMN SSSR prof. N.N. Blokhin). Adres avtorov: Moskva, 110, 3-ya Meshchanskaya, ul., d. 61/2, Institut eksperimental'noy patalogii i terapii raka.

(BREAST NEOPLASMS, etiol. & pathogen.

attempted demonstration of tumor-producing agent  
in cancer extracts in mice (Rus))

POGOSYANTS, Ye.Ye.; BOLONINA, N.I.; OL'SHEVSKAYA, L.V.

Steppe vole (*Lagurus lagurus* Pall) as a useful new animal for experimental oncological research. Vop.onk. 5 no.3:281-289 '59.

(MIRA 12:12)

1. Institute of Experimental Pathology and Therapy of Cancer, Moscow.  
Adres avtora: Moskva, 3-ya Meshchanskaya ul., d. 61/2, Institut eksperimental'noy patologii i terapii raka.

(NEOPLASMS, exper.

lemming *Lagurus lagurus* as research animal (Rus))

(LABORATORY ANIMALS,

lemming *Lagurus lagurus* as cancer research animal  
(Rus))

BOLONINA, N.I.

Experimental tumors induced in steppe voles with 9,10-dimethyl 1,2-benzanthracene. Vop.onk. 5 no.3:348-351 '59. (MIRA 12:12)

1. Iz laboratorii opukholevykh shtammov (zav. - doktor biol.nauk Ye.Ye. Pogosyants) otdela etiologii (zav. - deystvitel'nyy chlen AMN SSSR A.D. Timofeyevskiy) Instituta eksperimental'noy patologii i terapii raka (dir. - chlen-korrespondent AMN SSSR prof. N.N. Blokhin). Adres avtora: Moskva, 3-ya Meshchanskaya, d. 61/2, korp.9, Institut eksperimental'noy patologii i terapii raka.

(ANTHRACENE, rel. cpds.

9,10-dimethyl 1,2-benzanthracene, induction of exper. tumors in steppe lemming (Rus))

BOLONINA, N.I.

Tumors induced in *Lagurus lagurus* Pall. by methylcholanthrene.  
A transplantable strain of sarcoma in *Lagurus*. *Biul. eksp. biol.*  
*i med.* 49 no.2:99-101 F '60. (MIRA 14:5)

1. Iz laboratorii opukholevykh shtammov (zav. - doktor biologicheskikh nauk Ye.Ye.Pogosyants) otdela etiologii (zav. - deystvitel'nyy chlen AMN SSSR A.D.Timofeyevskiy) Instituta eksperimental'noy patologii i terapii raka (dir. - chlen-korrespondent AMN SSSR N.N.Blokhin) AMN SSSR, Moskva. Predstavlena deystvitel'nyy chlenom AMN SSSR A.D.Timofeyevskim. (TUMORS) (CHOLANTHRENE)

POGOSYANTS, Ye.Ye.; TSUBINA, M.G.; BOLONINA, N.I.

Selection of hybrid mice for tumor transplantation experiments. Vop.  
onk. 10 no.4:53-58 '64. (MIRA 17:11)

1. Iz Instituta eksperimental'noy i klinicheskoy onkologii AMN SSSR  
(dir. - deystvitel'nyy chlen AMN SSSR prof. N.N. Blokhin). Adres avtorov:  
Moskva, I-110, ulitsa Shchepkina, 61/2, korpus 9, Institut eksperimental'-  
noy i klinicheskoy onkologii AMN SSSR.

BOLONINA, N.I.

Resistance of the cells *Lactaria bulgarica* to some oncogenic and adenoviral and hemorrhagic viruses. *Vop. otd. biol. med.* 83 '85. (MIRA 84:8)

3. By laboratorii tsitogenetiki (rav. -- doktor. biol. nauk Ye. Ye. Pogozyanis) Instituta eksperimental'noy i klinicheskoy onkologii ANU USSR (dir. -- deystvitel'nyy chlen ANU SSSR T.N. Blazhenko).

PODZEY, L.K.; BOLONINA, N.I.

Pretumorous changes in the liver of C57BL mice induced by  
orthoaminoazotoluene. Vop. onk. 11 no.12:94 '65.

(MIRA 19:1)

1. Iz patofiziologicheskoy laboratorii (zav. - kand. med. nauk  
I.P. Tereshchenko) Gosudarstvennogo onkologicheskogo instituta  
imeni Gertsena (dir. - prof. A.N. Novikov).

CHUPEYEV, M.A.; MUKHANOVA, V.S.; MARKOVSKAYA, M.N.; POLONINA, S.S.; IVLEVA,  
L.D.

Use of surface-active agents in the grinding of carbon black in al-  
kyd binding substances. Lakokras. mat. i ikh prim. no.3:77-78 '63.  
(MIRA 16:9)

(Paint) (Carbon black) (Surface-active agents)

PANASYUK, B., metodist; BOLONINA, Ye.; MIRENKOVA, Lyuba (Ryazan')

What are you going to do this fall? IUn.nat. no.9:16-17 S '60.  
(MIRA 14:3)

1. Pedagogicheskiy kabinet Severo-Kavkazkoy zheleznoy dorogi (for Panasyuk).
  2. Rukovoditel' krushka tsvetovodov krayevoy stantsii yunnatov, Krasnodar (for Bolonina).
- (Cities and towns--Civic improvement)

BOLONKIN, A.A. [Bolonkin, O.O.]

Optimization of parameters in variational problems. Dop. AN URSSR  
no.5:580-582 '64. (MIRA 17:6)

1. Institut kibernetiki AN UkrSSR. Predstavleno akademikom AN Ukr  
SSR G.M.Savinym [Savin, H.M.].

BOLONKIN, A.A. (Bolonkin, O.O.)

Principle of extension and Jacobi's condition in variational calculus.  
Rep. AN USSR no. 7-849-213, 1964. (MIRA 1759)

I. Institut kibernetiki AN UkrSSR. Feodosiyske akademicheskoe  
AN Upravleniya G.N. Savinykh (Savin, H.M.).

BOLONKIN, A.A. [Bolonkin, G.G.]

Variational calculus and Bellman's functional equation, the interpretation of Lagrange's indeterminate factors. 'Dop. AN URSR no.10:1290-1293 '64. (MIRA 17:12)

1. Institut kibernetiki AN UkrSSR. Predstavleno ezadexkom AN UkrSSR G.N. Savinyum [Savin, E.M.].

I 9731-66 EWT(d)/FBD/FSS-2/EEC(k)-2/EWP(v)/EWP(k)/EWP(h)/EWP(l) LJP(c) AST/GS/BC  
ACC NR: AT5028934 SOURCE CODE: UR/0000/65/000/000/0034/0067

AUTHOR: <sup>44, 55</sup> Bolonkin, A. A.

ORG: none

TITLE: A method for solving optimal problems

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SOURCE: AN UkrSSR. Slozhnyye sistemy upravleniya (Complex control systems). Kiev, Naukova dumka, 1965, 34-67

TOPIC TAGS: optimum control, pulse regime, particular regime, sliding regime, non-linear optimum system, function, parameter, ordinary differential equation, optimal automatic control

ABSTRACT: A system described by a finite number of ordinary differential equations is taken for which the optimum problem is defined as follows: from the set of allowable functions  $y(x)$ ,  $u(x)$ , and parameters  $c$  ( $y(x)$ , called the phase coordinates of the system, is an  $n$ -dimensional continuous vector-function defined on the finite interval whose first derivatives can assume infinite values at a finite number of points;  $u(x)$ , called the control function, is an  $r$ -dimensional vector-function with the same properties as  $y(x)$ ; and  $c$  are constant structural parameters of the system), find values of  $\bar{y}(x)$ ,  $\bar{u}(x)$ , and  $\bar{c}$  which minimize a certain performance functional. The optimum problem formulated in this manner differs from the classical variational problem: not only the control function  $u(x)$ , but also the structural parameters are to be optimized and the study of the optimum problem is carried out in the class of functions

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whose first derivatives with respect to an independent variable can assume infinite values. A theorem is proved which establishes sufficient conditions under which the performance functional has an absolute minimum. The method used to prove the theorem is based on the construction of a so-called characteristic function  $\Psi$ . Three special modes of operation are investigated: 1) pulsed (discontinuous), 2) particular, and 3) sliding. In the second and third cases, conditions for switching on to such regimes, operating under such regimes and switching out are established. Two methods for synthesizing the nonlinear optimum systems are presented. The first method is based on the construction of an approximate characteristic function and the second method on the construction of an approximate control function as a function of phase coordinates and their terminal values. Orig. art. has: 6 figures and 87 formulas.

[LK]

SUB CODE: 12 / SUBM DATE: 03Aug65/ ORIG REF: 008/ OTH REF: 001/ ATD PRESS:

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Card 2/2

BOLONKIN, A., inzh., sportsmen 1-go razryada.

Fundamentals of the theory of flight of rocket models. Kryl.  
rod. 11 no.1:24-25 Ja '60. (MIRA 13:5)  
(Rockets--Models)

BOLONKIN, A., inzh., sportsmen I razryada

Dynamic soaring of a model. Kryl.rod. 13 no.6:24-25  
Je '62.

(MIRA 19:1)

BOLONKIN, Aleksandr Aleksandrovich; YEFREMOVA, Ye.V., red.; MARTYNOV, B.B., red.; KOROLEV, A.V., tekhn. red.

[Theory of the flight of flying models] Teoriia poleta letaiushchikh modelei. Moskva, Izd-vo DOSAAF, 1962. 311 p.  
(MIRA 15:10)

(Airplanes--Models) (Aerodynamics)

NATALENKO, Valentin Pavlovich, master sporta; YEFREMOVA, Ye.V., red.;  
BOLONKIN, A.A., red.; SORKIN, M.Z., tekhn. red.

[Models flying on cords]Kordovye letaiushchie modeli. Moskva,  
Izd-vo DOSAAF, 1962. 83 p. (MIRA 16:2)  
(Airplanes--Models)

BOLONKIN, A., inzh., sportsmen 1-go razryada; LEBEDINSKIY, M.

Victory of Soviet airplane modelists. Kryl.rod. 13  
no.11:12-14 N '62. (MIRA 15:12)  
(Airplanes—Models)

BOLONKIN, A.

Airplane-model rocket engines. Kryl. rod. 15 no.8: insert 12-15  
Ag '64 (MIRA 18:1)

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EWI(d)/FBD/FSS-2/EEC(k)-2/

LJP(c)

AST/GS/BC

ACC NR: AT5028935

SOURCE CODE: UR/0000/65/000/000/0068/0090

AUTHOR: Bolonkin, A. A.

54  
B+1

ORG: none

TITLE: Pulse, particular, and sliding modes of operation in flight dynamics problems

SOURCE: AN UkrSSR. Slozhnyye sistemy upravleniya (Complex control systems). Kiev, Naukova dumka, 1965, 68-90

TOPIC TAGS: automatic control, flight dynamics, sliding regime, pulse regime, particular regime, *optimal automatic control, aeronautic engineering, spacecraft trajectory*

ABSTRACT: The theory of pulsed, particular, and sliding modes of operation in optimal systems developed by the author in the same collection of articles (AN UkrSSR. Slozhnyye sistemy vpravleniya. Kiev, Naukova dumka, 1965, 34-67) is applied to the study of the following flight dynamics problems: 1) optimization of trajectories of flight vehicles when the angle of attack and the direction of the thrust vector is controlled; 2) optimization of vertical take-off trajectories of an airplane; 3) controlling the thrust of a spacecraft during flight in a central field; 4) the problem of the maximum flight range of an airplane with a simultaneous optimization of the wing area. Under certain simplifying assumptions applied to the flight conditions, the equations of motion are written for all cases, the corresponding variational problems are formulated, and equations for determining extremals are derived. Analysis

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of pulsed, particular, and sliding modes of operation in the above-defined optimal  
were made which made it possible in many cases to simplify the solution of these prob-  
lems. Orig. art. has: 5 figures and 97 formulas. [LK]

SUB CODE: 12,22,23/ SUBM DATE: 03Aug65/ ORIG REF: 006/ OTH REF: 002/ ATD PRESS: 4157

Card 2/2

L 15632-66 EWT(d)/EWT(l)/EWT(m)/EWP(m)/T-2/EWP(h)/FCS(k) GS  
ACC NR: AT6003570 SOURCE CODE: UR/0000/65/000/000/0119/0147

AUTHOR: Bolonkin, A. A.

ORG: none

TITLE: Investigation of <sup>1,55</sup>takeoff dynamics of a vertically rising airplane

SOURCE: Issledovaniya po dinamike poleta (Research on flight dynamics), no. 1. Moscow, Izd-vo Mashinostroyeniye, 1965, 119-147

TOPIC TAGS: ~~VTOL aircraft~~, VTOL aircraft, ~~vertical takeoff~~, vertical takeoff trajectory, ~~vertically rising airplane~~, vertical takeoff ~~airplane~~ aircraft, analog computer

ABSTRACT: The behavior of a VTOL airplane during a takeoff maneuver was studied by means of an MPT-9<sup>8</sup> electronic analog computer; the airplane was treated as a material point, and a system of nondimensional equations of its motion which were used in calculation is given; the trajectory was projected on an oscillograph screen so that all stages of the flight and the effects of all its parameters could be easily observed during the investigation. The following problems were studied: the takeoff trajectory, velocity, and time for various initial thrust angles, at various thrust-to-weight ratios and wing loadings; the effect of the

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ACC NR: AT6003570

angular velocity in tilting the thrust axis, and of the airplane speed on the trajectory for various initial thrust angles during the process of switching from vertical to horizontal flight; the effect of failure to operate some engines (so that 25 or 50% of the thrust is lost during the takeoff or when tilting the engines) on the takeoff trajectory. These problems are examined in detail and are accompanied with a number of diagrams in which the relationships between the takeoff parameters and the shapes of the trajectory under various conditions are shown. The investigation leads to the conclusion that two patterns of vertical takeoff are possible: with engines in vertical position, and with inclined engines; both patterns are discussed and illustrated by diagrams. The data obtained can be used as guidelines in studying other problems associated with vertical takeoff, and will help investigators to obtain answers to them in the first approximation. The possibility is mentioned of applying the results obtained here also to analysis of the vertical takeoff of airplanes equipped with tilting reaction engines, or with separate lifting and cruising engines, or with turboprops. The program of the investigation and of recording the trajectories is given in an appendix. Orig. art. has: 41 figures. [VK]

SUB CODE: 0109/SUBM DATE: 02Aug65/ ORIG REF: 001/ ATD PRESS: 4201

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L 04690-67 EWT(3)/EWI(1)/EWP(1) IJPC(1) GD:GW  
ACC NR: AT6003568

SOURCE CODE: UR/0000/65/000/000/0020/0078

AUTHOR: Bolonkin, A. A.

ORG: none

45  
B71

TITLE: Optimization of a trajectory of multistage flight vehicle

SOURCE: Issledovaniya po dinamike poleta (Research on Flight dynamics), no. 1. Moscow, izd-vo Mashinostroyeniye, 1965, 20-78

TOPIC TAGS: spacecraft trajectory, Euler equation, Coriolis force

ABSTRACT: The optimal motion of flight vehicles has been studied by many authors. However, the majority of these studies were concerned with determining optimal trajectories of single-stage flight vehicles which satisfy only the first necessary optimality condition—the Euler equations, or the necessary optimality conditions formulated in the form of the maximum principle of Pontryagin—and were not concerned with other necessary and sufficient optimality conditions.

In the study reviewed here [1], A. A. Bolonkin analyzes the optimal flight of a multistage flight vehicle in the case when the curvature and the rotation of the earth are taken into account and the constraints on the control.

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UDC: 629.197.7.005

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ACC NR: AT6003568

functions are expressed by inequalities. All necessary and sufficient optimality conditions (the Euler equations, Clebsch, Weierstrass, and Jacobi conditions) are analyzed on the basis of a general study of necessary and sufficient optimality conditions in the variational problem of optimizing discontinuous control processes with inequality-type constraints imposed upon the control function presented in the appendix of the article. To simplify the presentation of the general results, the optimal control is divided into the following two problems: 1) analysis of necessary and sufficient conditions for the strong relative minimum of the performance functional in the case when the domain in which the control function varies is bounded, the control function is discontinuous at certain points, and the phase trajectory has corner points (so-called discontinuous variational problem of the first kind); 2) analysis of necessary and sufficient conditions for the multistage problem (the discontinuous variational problem of the second kind, or the variational problem with discontinuous right-hand sides) when, in addition to the conditions formulated in the first problem, the motion of a body is described at various stages by various differential equations.

The first type of problem is reduced to the ordinary problem of Bolza—determining the minimum in the class of curves with corner points—and

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the second type of problem, to determining the minimum in the class of curves with corner points which intersects the given switching surfaces. The conditions of Euler, Weierstrass, Clebsch, and Jacobi, the Erdman-Weierstrass corner condition, and the transversality condition, which are necessary conditions for the normal nonsingular curve (extremal) to minimize the performance functional, are analyzed in the discontinuous variational problems of both the first and the second kind. The sufficient conditions of its strong relative minimum are obtained from an analysis of the second variation of the performance functional. Simple algorithms for verifying the sufficient conditions are presented.

Since the thrust, mass, aerodynamic, and other characteristics of the separate stages of a multistage flight vehicle are different, the problem of optimizing the flight trajectory is considered as the discontinuous variational problem of the second kind. The optimal flight problem is analyzed under the following conditions: 1) the flight vehicle moves in the plane of a great circle of the earth; 2) the design of the flight vehicle is known (the number of stages, the amount of propellant in each stage, and other parameters); 3) stages separate without shock at the instant that the propellant is burned out; and 4) the flight vehicle is considered as a mass point and the earth as a sphere.

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In the orthogonal coordinate system with its origin in the mass point and the x-axis in the direction of flight, the equation of motion of the vehicle, with the curvature of the earth, the components of the Coriolis acceleration, and the variation of the gravitational acceleration with the altitude taken into consideration, is set up, using the following simplifying assumptions: 1) the centrifugal force due to rotation of earth is to be neglected; 2) the component of the Coriolis acceleration perpendicular to the plane of the flight is to be neglected; and 3) the exhaust velocity of combustion products does not depend on the altitude.

In the equations of motion, functions  $L(t)$ ,  $H(t)$ ,  $V(t)$ ,  $\theta(t)$ , and  $m(t)$  (flight range, flight altitude, flight velocity, the angle of inclination of the trajectory with the local horizon, and the mass of the vehicle, respectively) are considered as phase coordinates and functions  $\alpha(t)$ ,  $\omega(t)$ , and  $\beta(t)$  (the angle of attack, the angle between the thrust vector and the velocity vector, and the fuel consumption, respectively) as control functions constrained by certain inequalities. The phase coordinates  $L(t)$ ,  $H(t)$ ,  $V(t)$ , and  $\theta(t)$  are continuous and piecewise differentiable functions,  $m(t)$  is a continuous and piecewise differentiable function in each stage but has a finite jump at the instant the stages separate; control functions  $\alpha(t)$ ,  $\omega(t)$ , and  $\beta(t)$  have discontinuities of the first kind.

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With the above-formulated conditions, the optimum trajectory of the flight vehicle is sought from the optimality condition of the given phase coordinate. The minimum propellant consumption, the maximum terminal velocity, or others can be taken as the optimizing coordinate. The boundary conditions at the ends of the trajectory are considered as fixed, but the case of variable boundary conditions is also analyzed. In this way, the formulated optimal flight problem is considered as the Mayer variational problem; the results of the general theory presented in the appendix are applied to its analysis. The necessary and sufficient conditions for the existence of the weak and strong relative minima of the performance functional are verified.

It is concluded that when the Euler conditions and the strengthened Clebsch and Jacobi conditions are satisfied on a nonsingular curve, this curve ensures the weak relative minimum of the performance functional, and when the Euler and the strengthened Weierstrass and Jacobi conditions are satisfied, this curve ensures the strong relative minimum of the performance functional. Some peculiarities of the optimal path of a multistage flight vehicle are presented in connection with the study of necessary and sufficient optimality conditions. Orig. art. has: 4 figures and 250 formulas. [FSB: v. 2, no. 8]  
SUB CODE: 22, 20 / SUBM DATE: 02Aug65 / ORIG REF: 011 / OTH REF: 004  
Card 5/5

WILSON, G.S., and Hye-Wha Jai--(1952) "On the design of a piston in  
a tube with mobile pistons." *Isr. J. Sci. Eng. (The State Univ. of Israel)*  
vol. 1, No. 1, p. 1-10 (1952-53), 150 copies (11, 21-50, 99)

- 8 -

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D234/D303

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AUTHOR: Bolonkin, G.S.

TITLE: On the motion of gas in a pipe with movable piston

PERIODICAL: Referativnyy zhurnal. Mekhanika, no. 9, 1961, 8,  
abstract 9 B44 (Nauch. tr. Mosk. gorn. in-t, 1957,  
sb. 19, 19-41)

TEXT: The following problem is solved: in an infinite pipe two pistons with the masses  $M_1$  and  $M_2$  are placed, between them there is an ideal gas with the mass  $m$  and initial parameters  $P_0, \rho_0$ . At  $t > 0$  the process is regarded as adiabatic, there is no friction between the pistons and the walls of the pipe, the external pressure is equal to 0. The mathematical problem consists in finding the solution of

$$\frac{\partial^2 \xi}{\partial x^2} - \frac{1}{c_0^2} \left( \frac{\partial \xi}{\partial x} \right)^2 + 1 \frac{\partial^2 \xi}{\partial t^2} = 0$$

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On the motion of gas...

with initial and boundary conditions

$$\begin{aligned} \xi(x,0) &= x \\ \xi(x,0) &= 0 \end{aligned} \quad - a_2 \leq x \leq a_1$$

$$\frac{\partial^2 \xi}{\partial x^2} = \frac{\mu_1}{e} \frac{\partial \xi}{\partial x} \quad \text{where } x = a_1$$

$$\frac{\partial^2 \xi}{\partial x^2} = - \frac{\mu_2}{e} \frac{\partial \xi}{\partial x} \quad \text{where } x = - a_2.$$

The solution is represented in the form

$$\xi(x,t) = \xi_1(t) \xi_2(x) + U(x,t)$$

and it is required that

$$\frac{\partial U(x,t)}{\partial x} \leq \xi_1(t) \frac{\partial \xi_2(x)}{\partial x}$$

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On the motion of gas...

$\xi_1(t)$ ,  $\xi_2(x)$  and  $U(x,t)$  are determined by expanding them in powers of a small parameter, which is taken as  $\mu = \mu_1 + \mu_2 \ll 1$  [Abstracter's note: Appears to be a misprint for  $\ll 1$ ] where  $\mu_1 = m/\gamma M_1$ ,  $\mu_2 = m/\gamma M_2$ , terms of the order of  $\mu^2$  and higher being discarded. The function  $\xi_1(t)$  is found from

$$\int_1^{\xi_1} \frac{d\xi_1}{\sqrt{1 - \xi_1 - (\gamma - 1)\xi_1^2}} = \frac{c_0}{t} \sqrt{\frac{2\mu}{\gamma - 1}} t$$

$$\xi_2(x) = x + \frac{\mu}{6t^2} [(x + a_2)^3 - 3a_2(x + a_2)^2 - 1(1 - 3a_2)(x + a_2)]$$

$U(x,t)$  is represented in the series form

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$$U(x,t) = \sum_{n=1}^{\infty} U_{1n}(t) U_{2n}(x)$$

X

On the motion of gas...

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where

$$U_{1n}(t) = \xi_1(t)^{(\gamma+1)/4} [A\sqrt{z} j_\nu(z) + B\sqrt{z} Y_\nu(z)]$$

$$U_{2n}(x) = (-1)^{n+1} \frac{2\mu}{\pi^3 n^3} [a_1 + (-1)^n a_2] \sin \frac{\pi n}{l} (x + a_2)$$

Here A and B are constant coefficients and

$$z = \sqrt{\frac{2}{(\gamma-1)\mu}} \pi n \text{ are } \sin \xi_1 \frac{1}{(\gamma-1)/2}$$

The motion of the pistons for  $t \ll (1/c_0) \sqrt{(2/\mu)}$  is described by

$$\xi_n = x_n \left( 1 + \frac{\mu c_0^2 t^2}{2l^2} \right)$$

$$\dot{\xi}_n = x_n \frac{\mu c_0^2 t}{l^2}$$

Analogous expressions for  $\xi_n$  and  $\dot{\xi}_n$  are obtained in the exact

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On the motion of gas...

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D234/D303

solution of the problem for small  $t$  and  $x_n = 1/2$  (Stanyukovich, K.P. Neustanovivshiyesya dvizheniya sploshnoy zhidkosti (Non-stabilized Motions of a Continuous Liquid), M. Gostekhizdat, 1955, 638). For  $t \rightarrow \infty$

$$\dot{\xi}_n = x_n \sqrt{\frac{4P_0}{(\gamma - 1)M^2}}$$

which corresponds to the case when the initial energy of the gas has been wholly converted into the kinetic energy of the pistons. The paper contains no comparison of the solution obtained in it with the known solutions of this problem. There are misprints and errors (e.g. in equations (52), (59), (79), (87), (113)). 9 references.  
[Abstracter's note: Complete translation.]

Card 5/5

X

L 16722-63

EPA(b)/EWT(1)/BDS

AEDC/AFFTC/ASD/AFMDC Pd-4

S/124/63/000/004/008/064

59

AUTHOR: Bolonkin, G. S.TITLE: Contribution to solution of Lagrange problem, taking the covolume effect into considerationPERIODICAL: Referativnyy zhurnal, Mekhanika, no. 4, 1963, 12, abstract 4B83  
(Tr. Vses. Zaochn. energ. in-ta, no. 22, 1962, 183-200)

TEXT: The problem of the longitudinal motion of a gas with a mass  $m$ , contained in a finite volume of an infinite cylindrical tube of constant section is considered; one end of the tube is closed tightly, and the other is covered with a moveable piston with mass  $M$ , which is displaced without resistance. In the undisturbed state, the gas has constant pressure and constant density  $\rho_0$ ; at the time  $t = 0$ , the compressed gas, expanding activates the piston. The motion of the piston and the gas is studied under the following postulates: 1) the equation for the state of a greatly compressed gas is adopted in the form:  $p(1/\rho - \alpha) = RT$ , where  $\alpha =$  the covolume of a unit of mass of powder gases; 2) an examination is made of the adiabatic process of gas expansion, and 3) it is assumed that  $m$  is much less than  $M$ . Equations are derived for finding the piston speed at the beginning of motion (at small  $t$ -values), in marginal conditions when  $t$  is very large, i.e., for the

Card 1/2

L 16722-63

S/124/63/000/004/003/064

Contribution to solution ..... 0

area of quasiadiabatic expansion of gas, and for all subsequent time, and also equations determining the one dimensional adiabatic process of gas expansion in a tube, taking covolume into account. Ye. A. Slutskiy.

[Abstracter's note: Complete translation.]

Card 2/2

BOLONKIN, N.A.; ROZENFEL'D, L.M.

Photomicrographic method for studying ice structure in soil.

Sbor.trud.po agron. fiz. no.5:134-136 '52.

(Photomicrography) (Frozen ground)

(MIRA 11:7)

ACCESSION NR: AP037438

S/0021/64/000/005/0580/0582

AUTHOR: Bolonkin, O. O.

TITLE: Optimizing the parameters in variational problems

SOURCE: AN UkrRSR. Dopevidi, no. 5, 1964, 580-582

TOPIC TAGS: optimizing parameters, variational problem, variational calculation, functional extremum, vector-constant minimizing parameter, maximizing parameter, relative extremum, absolute extremum

ABSTRACT: The customary problem of Mayer [section 69 of G. A. Bliss, Lektsii po variatsionnomu ischisleniyu, IL, 1950] for a variational calculation in which an extremum is sought for the functional

$$I = G(c, x_1, y(x_1), x_2, y(x_2)), \quad (1)$$

is considered.  $C$  in the functional is an  $l$ -dimensional vector of constants:

$$C = \{c_1, c_2, \dots, c_l\}$$

Card 1/2

ACCESSION NR: AP4037438

To c are added the independent links:

$$\varphi_m(c) = 0 \quad (m = 1, \dots, q < l) \quad (4)$$

The problem can then be stated as follows: to determine a vector of constants that will result in an extremum value for I. Three theorems are presented and discussed on the necessary and sufficient conditions for both the relative and absolute extrema of functional (1), depending on c, when additional links (4) and constraints of the inequality type are imposed. Orig. art. has 15 numbered equations.

ASSOCIATION: Instytut kibernetyki AN UkrSSR (Institute of Cybernetics, AN UkrSSR)

SUBMITTED: 17Jul63

DATE ACQ: 03Jun64

ENCL: 00

SUB CODE: MA

NO REF SOV: 001

OTHER: 001

Card 2/2

USSR / Cultivated Plants. Fodder Grasses and Root Crops. M-3

Abs Jour : Ref Zhur - Biologiya, No 2, 1959, No. 6313

Author : Bolonkina, K.  
Inst : All-Union Institute of Fodders  
Title : The Field Pea as a Valuable Crop in the  
Northern Districts

Orig Pub : Nauka i peredov. opyt v s.-kh., 1958, No 3,  
42-43

Abstract : The field pea of the Alexandrovskaya 231  
variety mixed with oats and white mustard in  
various proportions was sown in the All-Union  
Institute of Fodders in 1956-1957. The yield  
of field peas was higher when it was sown  
alone, but the plants lodged and this made  
mechanized harvesting difficult. A yield of  
peas of 33 cwt/ha (including 15 cwt of field

Card 1/2

67

USSR / Cultivated Plants. Fodder Grasses and Root Crops. M-3  
"APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000206120009-1"

Abs Jour : Ref Zhur - Biologiya, No 2, 1959, No. 6313

pea) and 40 cwt/ha of straw was obtained in  
1957, when a mixture of 90 kg/ha of peas and  
133 kg of oats was sown. The norm of sowing  
of 70 kg/ha of field pea and 150 kg/ha of oats  
was found to be best at the Ust'-Kulomskiy  
variety testing section (KomiASSR). Good  
results were obtained by sowing 146 kg/ha of  
field pea and 9 - 12 kg of mustard in order  
to obtain grain. The grass did not lodge, the  
yield of grain of field peas was 14.4. For  
mustard the yield was 2.7 - 3.6 cwt/ha. The  
highest and the most stable yields are produced  
with the Alexandrovskaya 231, Falenskaya 42 and  
Spartanets field pea varieties. -- Ye. A.  
Okorokova

Card 2/2

~~SECRET~~  
BOLONKINA, K.K., aspirant.

Grow more field peas. Zhivotnovodstvo 20 no.2:40-43 F '58.

1. Vsesoyuznyy nauchno-issledovatel'skiy institut kormov imeni V.P.  
Vil'yamsa. (MIRA 11:1)

(Field peas)

BOLONKINA, K.K., Cand Agr Sc<sup>h</sup> -- (diss) "Basic methods ~~for~~ <sup>of the</sup>  
cultivating <sup>on of</sup> *Maple pica* in the non-chernozem region of the USSR."  
Mos, 1959, 19 pp (All-Union Sci Res Inst of <sup>Food</sup> ~~Seeds~~ in V.R. Vil'yams)  
100 copies (KL, 36-59, 110)

- 62 -

BOLONKINA, K.K., starshiy nauchnyy sotrudnik

Field peas as an important source of vegetable protein. Zhivotnovodstvo 21 no.4:46-48 Ap '59. (MIRA 12:5)

1. Sibirskiy nauchno-issledovatel'skiy institut zhivotnovodstva. (Field pea)

BOLONOV, A.P., inzhener.

Introduce new electrical equipment without delay. Prom.energ. 11  
no.5:26-28 My '56. (MIRA 9:9)

(Electric apparatus and appliances)

Translation from: Referativnyy zhurnal. Mekhanika, 1957, Nr 3, p 122 (USSR) SOV/124-57-3-3467

AUTHORS: Balandin, Yu., Bolonov, I.

TITLE: Concerning a Method of Investigating a Longitudinal Impact (Ob odnom sposobe rassmotreniya prodol'nogo udara)

PERIODICAL: Sb. rabot stud. nauch. o-va, Penzensk. industr. in-ta, 1956, Nr 2, pp 3-7

ABSTRACT: The impact of a load against an imponderable rod is studied as an oscillation of a system having one degree of freedom. This method of study is as well known as the method based on the energy relationships.

V. L. Biderman

Card 1/1

BARINBERG, A.D.; BOLONOV, N.I.

Hydromagnetolectric commutator for multiple-point control systems.  
Avtom. i prib. no.3:56-57 JI-S '64. (MIRA 18:3)

L 38992-66 EWT(1)/EWP(m)/T-2 IJP(c)  
ACC NR: AP6016910 SOURCE CODE: UR/0143/66/000/001/0065/0071

AUTHOR: Bolonoy, N. I. (Engineer); Kolovandin, B. A. (Engineer); Skrinnik, Ye. F. (Engineer); Povkh, I. L. (Corresponding member AN UkrSSR, Doctor of technical sciences, Professor) 41 B

ORG: Donetsk State University (Donetskiy gosudarstvennyy universitet); Donetsk Scientific-Research Institute of Ferrous Metallurgy (Donetskiy nauchno-issledovatel'skiy institut chernoy metallurgii)

TITLE: Investigation of the structure of magnetohydrodynamic flows by an induction anemometer 10

SOURCE: IVUZ. Energetika, no. 1, 1966, 65-71

TOPIC TAGS: anemometer, MHD flow, high temperature instrument

ABSTRACT: The article is devoted to a description of an instrument for investigating the structure of magnetohydrodynamic flows, an induction anemometer. The principles of measuring the local velocity by the induction methods are given. The object of the investigation was a flow of a conduction fluid with a free surface situated in a comparatively strong magnetic field. The basic components of the experimental device were the liquid system, magnetic field source, and measuring equipment. The experiments carried out showed that the investigation of the advantages of the induction method of measuring the characteristics of turbulence

UDC: 621.032-621.3.082.78

Card 1/2

L 38992-66  
ACC NR: AP6016910

APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000206120009-1

and the features of the induction anemometer which the authors used proved to be quite fruitful and offered considerable possibilities for a thorough investigation of the structure of MHD flows at sufficiently high Hartmann numbers. With the appropriate amplifying and measuring equipment the instrument on the whole is simple and reliable in operation. The obvious advantages of this instrument are: the possibility of investigating the structure of the flows of both ordinary and Newtonian fluids in a wide range of frequencies and its noninertia. A change of velocity fluctuation almost instantly causes a change of the induced emf. Finally, the design of the sensor permits a rigorous separation of the signals induced by various components of the fluctuating velocity. Orig. art. has: 6 figures and 13 formulas. O

SUB CODE: 20/ SUBM DATE: 13Sep65/ ORIG REF: 002/ OTH REF: 002

Card 2/2 1/5

BOLCNOVA, Ye. V., Engr. Cand. Tech. Sci.

Dissertation: "Investigation of Abrasive Substitutes for Diamonds." Central Sci Res  
Inst of Technology and Machine Building - "TsNIITMASH." 19 May 47.

SO: Vechernyaya Moskva, May, 1947 (Project #17836)

BOLONOVA, YE.V.

Instrument for measuring amount of wear of grinding wheel  
Podshipnik no. 1,1952

1. BOLONOVA, Ye.V
2. USSR (600)
4. Grinding Wheels
7. Checking of quality of abrasive wheels by means of chemical analysis.  
Podship'no. 10, 52

9. Monthly List of Russian Accessions, Library of Congress, February 1953. Unclassified.

BAYKOV, S.P., kand. tekhn. nauk; BELENKO, I.S., kand. tekhn. nauk;  
BELKOV, S.F., inzh.; BELYANCHIKOV, M.P., inzh.; BERNSHTEYN,  
I.L., inzh.; BOGORODITSKIY, D.D., inzh.; BOLONOVA, Ye.V.,  
kand. tekhn. nauk; BROZGOL', I.M., kand. tekhn. nauk;  
VLADIMIROV, V.B., inzh.; VOLKOV, P.D., kand. tekhn. nauk;  
GERASIMOVA, N.N., inzh.; ZHUKHOVITSKIY, A.F., inzh.;  
KABANOV, M.F., inzh.; KANEVTSOV, V.M., kand. tekhn. nauk;  
KOLOTENKOV, I.V., inzh.; KONDRAT'YEV, I.M., inzh.;  
KUZNETSOV, I.P., kand. tekhn. nauk; L'VOV, D.S., kand.  
tekhn. nauk; LYSENKO, I.Ya., kand. tekhn. nauk; MAKAROV,  
L.M., inzh.; OLEYNIK, N.D., inzh.; RABINER, Ye.G., inzh.;  
ROZHDESTVENSKIY, Ya.L., kand. tekhn. nauk; SAKHON'KO, I.M.,  
kand. tekhn. nauk; SIDOROV, P.N., inzh.; SPITSYN, N.A., prof.,  
doktor tekhn. nauk; SPRIŠHEVSKIY, A.I., kand. tekhn. nauk;  
CHIRIKOV, V.T., kand. tekhn. nauk; SHEYN, A.S., kand. tekhn.  
nauk; NIEBERG, N.Ya., nauchnyy red.; BLAGOSKLONOVA, N.Yu., inzh.,  
red. izd-va; SOKOLOVA, T.F., tekhn. red.

[Antifriction bearings; manual] Podshipniki kachenia; spra-  
vochnoe posobie. Moskva, Gos. nauchno-tekhn. izd-vo mashino-  
stroit. lit-ry, 1961. 828 p. (MIRA 15:2)  
(Bearings (Machinery))

BOLONOVA, Ye.V., kand. tekhn.nauk

Evaluating the quality of grinding wheels in the bearing industry.  
Vest.mash. 41 no.8:59-63 Ag '61. (MIRA 14:8)  
(Grinding wheels--Testing)

I 44694-66 EBT(d)/EWT(m)/EWP(c)/EWP(k)/EWP(h)/I/EWP(v)/EWP(t)/EWP(l)/ETI ISP(c)

ACC NR: AR6010655 JD/DJ

SOURCE CODE: UR/0276/65/000/010/B179/B180

AUTHOR: Bolonova, Ye. V.

43

TITLE: A highly productive method for grinding the convex surface of cylindrical rollers

B

SOURCE: Ref. zh. Tekhnologiya mashinostroyeniya, Abs. 10B1213

REF SOURCE: Tr. Seminara po vopr. progressivn. metodov shlifov. i dovodki detaley, obespech. vysok. i stabil'n. tochnost' i dolgovechn. podshipnikov kacheniya. M., 1964, 94-104

TOPIC TAGS: grinding machine, roller bearing, metal finishing

ABSTRACT: It is experimentally established that efficient centerless grinding of the convex bearing surface of cylindrical rollers by the "through-pass" method is possible if a centerless grinder is used with a radial spindle play of less than 2 μ using the equipment design method developed at the VNIPP with an EB 12SNV grinding and an EB 12STV driver. Under these conditions, the accuracy for finishing the convex surface (curvature and asymmetry) for rollers 20-50 mm in diameter may be kept to 3-5 μ (per side) with a ripple of 0.5-0.8 μ, ellipticity of 0.5-0.7 μ and flatness of 0.9-1.5 μ (in a 60° prism). The use of convex rollers in bearings improves contact conditions and increases the service life of the bearings by a factor of 1.5-2. 9 illustrations, 1 table. L. Romancheva. [Translation of abstract]

SUB CODE: 13

Card 1/1 hs

UDC: 621.925.6-434

ANTONENKO, M.G., inzhener; BOLONSKIY, N.B., inzhener.

Device for transfusion of ethylated gasoline. Bezop.truda  
v prom. l no.8:34-35 Ag '57. (MLRA 10:8)  
(Automobiles--Apparatus and supplies)

ANTONENKO, M.; BOLONSKIY, N. B.

Device for pouring ethyl benzine and rendering it harmless.  
Okhr. truda i sets. strakh. no.2:87-88 Ag '58.      (MIRA 12:1)  
(Gasoline--Safety measures)

USSR / Cultivated Plants. Fruits, Berries.

M-7

Abs Jour : Ref Zhur - Biologiya, No 13, 1958, No. 56721

Author : Bolonyaev, A.

Inst : Not given

Title : Achievements in the Field of the Far-East Horticulture

Orig Pub : Kolkhoznoye proiz-vo, 1957, No 9, 41-42

Abstract : The first specialized experimental institution of horticulture on the territory of the Far-East was organized in Voroshilov-Ussuriyskiy in 1932. The area occupied by gardens and berry shrubs during the years of Soviet rule in the Far-East reached 8000 ha. Winter resistant high quality varieties of apple tree, pear, prune, grapes and black currant were created by individual selectionists, amateurs, and the Far-East scientific-research institute of agriculture.

Card 1/1

COUNTRY : USSR  
CATEGORY : Cultivated plants. Fruit. Berry. Indiferent.  
REF. JOUR. : Zhurnal, No. 3, 1959, No. 11089  
AUTHOR : Boboyagov, A.  
TITLE :   
CHRG. PUB. : Nauch i peredov. opyt v x. zh., 1958, No. 6, 37-39  
ABSTRACT : The history of the development of fruit growing in the Far East is given. Before the Revolution, there were about 200 hectares of orchards and berry fields here and at the present time - more than 4200 hectares. Results are cited of the development of new varieties of fruit, berry and grape plants by scientific research institutions and by the experimenters of the Far East.

REF: 1/1

... .., kand. sel'khoz. nauk; BOLONYAYEV, A.V.,  
red.; KAYDALOVA, M.D., tekhn. red.

[Communal and individual orchards in the Far East] Kollektivnyi i  
priusadebnyi sad na Dal'nem Vostoke. Khabarovsk, Khabarovskoe  
knizhnoe izd-vo, 1957. 123 p. (MIRA 14:9)  
(Soviet Far East—Fruit culture)

BOLONYAYEV, Aleksey Vasil'yevich, kand. sel'khoz. nauk, laureat  
Stalinskoy premii; MARKOVA, S.M., red.; KAYDALOVA, M.D.,  
tekhn. red.

[Fruit and berry crops in the Far East] Plodovo-iagodnye kul'-  
tury Dal'nego Vostoka. Khabarovsk, Khabarovskoe knizhnoe izd-  
vo, 1961. 311 p. (Soviet Far East--Fruit) (MIRA 16:5)  
(Soviet Far East--Berries)

BOLONYI, F.; BARTA, I.

Contribution to the angio-architecture of the hypothalamus. Acta  
morph. hung. 4 no.3:293-299 1954.

1. Department of Histology and Embryology (director prof. I.Toro)  
and the Department of Cerebral and Nervous Diseases (director prof.  
Gy.Hyiro) of the Medical University, Budapest and the Department  
of Anatomy of the Medical University, Debrecen (director prof.  
I.Krompecher.

(HYPOTHALAMUS, blood supply  
angio-architecture)

HUNGARY/Human and Animal Morphology. Skeleton.

8

Abs Jour: Ref Zhur-Biol., No 15, 1958, 69634.

Author : Dolonyi, F., Dalia, Piroška.  
Inst : Hungarian Academy of Sciences.  
Title : Experimental Changes of Argyrophilic Fibers.

Orig Pub: Acta morphol., Acad. sci. hung., 1956, Vol. 7,  
No 1, 23-31.

Abstract: Studies were made of changes in the argyrophilic fibers of the tongues of 202 frogs subjected to experimental influences of one type or another. The changes are of three types. Cauterization, treatment with histamine, and interruption of the blood supply lead to local proliferation and thickening of fibers (with hemostasis, this occurs primarily around the blood vessels).

Card : 1/2

EXCERPTA MEDICA Sec 16 Vol 7/7 Cancer July 59

2852. **Study on the reticulin fibers of brain tumors** BÖLÖNYI F. Inst. of Anat.,  
Histol. and Embryol., Med. Univ., Debrecen, Hungary *J. Neuropath. exp. Neurol.*  
1958, 17/2 (240-246) Illus. 10

Thirty-five brain tumours of different types were studied. The orientation of reticulin fibres takes place principally along the vessels. In meningiomas the arrangement of the reticulin fibres is, to a great extent, intravascular and independent of the vessels. These fibres occur in greater number in sarcomas than in carcinomas. Tumour cells often grow in the spaces of the reticulin network. In every brain tumour marked thickening of the perivascular fibres was observed. The proliferation of reticulin fibres in gliomas originates from centres in the perivascular regions. The reticulin fibre architecture of tumours is very much determined by their type and angio-architecture.

Perémy - Budapest

BOLOS, M.

Application of labor psychology to railroads p.305.

REVISTA CAILOR FERATE. (Calle Ferate Romine)  
Bucuresti, Rumania  
Vol. 7, no. 6, June 1959.

Monthly list of Eastern European Accession Index (EEAI) LC vol. 8, No. 11  
November 1959  
Uncl.

BOLOSHENKO, R.A., inzh.

Sliver traps in a coal pulverizing system. Energetik 10  
no.11:17-18 N '62. (MIRA 15:12)  
(Electric power plants)  
(Coal, Pulverized)

BOLOSHENKO, R.A., inzh.

Sludge separator in a hydraulic ash removal system. Elek. sta.  
34 no.3:81-82 Mr '63. (MIRA 16:3)  
(Ash disposal)

BOLOSHEIKO, R.A., inzh. (Novosibirsk)

Increasing the efficiency of the boiler department of the  
Novosibirsk Thermal Electric Power Plant No. 3. Energetik  
13 no. 12:7-11 D '65 (MIRA 19:1)

BOLOSHIN, I.

TSvetnoe teletvidenie. [Color television]. (Radio, 1950, no. 5, p. 45-47).  
DLC: TK540.R76

SO: Soviet Transportation and Communications, A Bibliography, Library of Congress,  
Reference Department, Washington, 1952, Unclassified.

BOLOSHIN, I. Eng. Lt. Col., Cand. Tech. Sci.

"Television in Warfare," Krasnaya Zvezda, No.166, p. 3, 15 July 1955

Summary of article D 418293

Translation #41773

BOLOSHIN, I., Eng.Lt. Col. Cand Tech. Sci.

"Television on the Battlefield," from the book Modern Military Technology, 1956,  
Page 206.

Translotion 1114585

KULIKOVSKIY, Aleksandr Aleksandrovich; BOLOSHIN, Igor' Aleksandrovich;  
POTRYASAY, Vladimir Filippovich; AKALJUNIN, S.A., redaktor; CHEKHOV,  
V.S., tekhnicheskij redaktor

[Principles in teaching radio receiver design] Osnovy uchebnogo  
proektirovaniia radiopriemnikov. Pod obshchey red. A.A.Kulikovskogo.  
Moskva, Gos. energ. izd-vo, 1956. 327 p. (MLRA 10:1)  
(Radio--Receivers and reception)

ITSKHOKI, Yakov Semenovich; Prinimali uchastiye: SHATS, S.Ya.; GRIGORIN-  
RYABOV, V.V.; VIGLIN, S.I.; OVCHINNIKOV, N.I.; BOLOSHIN, I.A.;  
ZABOLOTSKIY, N.G., red.; KORUZEV, N.N., tekhn.red.

[Pulse machines] Impul'snye ustroistva. Moskva, Izd-vo "So-  
vetskoe radio," 1959. 727 p. (MIRA 12:7)  
(Pulse techniques (Electronics))

NIKOL'SKIY, Igor' Aleksandrovich; BOLOSHIN, I.A., red.

[Quantum amplifiers] Kvantovye usiliteli. Moskva, Izd-  
vo "Energia," 1964. 62 p. (Massovaya radiobiblioteka,  
no.532) (MIRA 17:8)

L 1900-66 EWT(d)/EEC(k)-2  
ACCESSION NR: AP5024169

UR/0115/65/000/008/0032/0035  
621.391.822.083

AUTHOR: Gertsenshteyn, M. Ye.; Boloshin, I. A.

20  
B

TITLE: Measurement of the noise factor of optical-range linear receiving systems

SOURCE: Izmeritel'naya tekhnika, <sup>9m</sup>no. 8, 1965, 32-35

TOPIC TAGS: optic receiver, receiver characteristic

ABSTRACT: The appearance of lasers had led to the development of linear optical receivers with transmission bands that are relatively narrow in the optical range. The article discusses the determination and measurement of the noise characteristics of such devices, particularly the noise factor, which is a variable permitting not only the calculation of sensitivity, but also an evaluation of the noise characteristics of the apparatus from the standpoint of realization of its physical potential. In the analysis of noise measurements in the optical range, the following characteristics are considered: (1) the noise power of technically feasible noise sources is very low, and (2) in the optical range, the size of radiation sources and resonators are much greater than the wavelength; for this reason, the reception of many types of waves is possible in noise measurements (the systems are of a multimode character). The consequences of these characteristics

Card 1/2

L 1900-66  
ACCESSION NR: AP5024169

are considered in a discussion of the measurement of the noise factor of single-mode receivers. The analyzed method of measuring the noise factor makes it possible to determine the noise characteristics of not only an isolated photocathode, but of the entire apparatus making up the receiver. Orig. art. has: 1 table and 12 formulas.

ASSOCIATION: None

SUBMITTED: 00

ENCL: 00

SUB CODE: EC, OP

NO REF SOV: 006

OTHER: 002

*mlb*  
Card 2/2

GERTSENSHTFYN, M.Ye.; BOLOSHIN, I.A.

Theoretical noise minimum of linear systems. Radiotekhnika  
20 no.8:78-79 Ag '65. (MIRA 18:8)

1. Deystvitel'nyye Nauchno-tekhnicheskogo obshchestva  
radiotekhniki i elektrosvyazi imeni A.S. Popova.

GERTSENSHTEYN, M.Ye.; BOLOSHIN, I.A.

Capacitive displacement transducer as a parametric system.  
Radiotekh. i elektron. 10 no.12:2271-2272 D '65.

1. Submitted December 30, 1964.

(MIRA 19:1)

L 23182-66 FSS-2/EWT(1) WR  
ACC NR: AP6004355

SOURCE CODE: UR/0108/65/020/010/0072/0074

AUTHOR: Gertsenshteyn, M. Ye. (Active member); Boloshin, I. A. (Active member)

ORG: Scientific and Technical Society of Radio Engineering and Electrocommunication  
(Nauchno-tekhnicheskoye obshchestvo radiotekhniki i elektrosvyazi)

TITLE: Receiving radar signals in the optical band

SOURCE: Radiotekhnika, v. 20, no. 10, 1965, 72-74

TOPIC TAGS: radar, optic radar, radar receiver, electromagnetic field, frequency band

ABSTRACT: The peculiarities of radar reception associated with the quantum structure of the electromagnetic field are theoretically considered when  $hf \gg kT$ . Two cases are examined: (1) Minimum band,  $sB \gg n$ ; in this case, the receiver measures only real photons and is insensitive to zero fluctuations; the number of received photons is a Poisson-law-distributed random value; under noise conditions, formulas of the classical detection theory may prove invalid. Here,  $B$  is the frequency band in space,  $n$  is the number of quanta received per second,  $s$  is the number of modes discernible by the receiver. Thus, the detection characteristics of the optical band depend on the type of receiver and its regime of operation. Orig. art. has: 7 formulas.

SUB CODE: 17 / SUBM DATE: 01Feb65 / ORIG REF: 011 / OTH REF: 006

Card 1/1

UDC: 621.396.96

60  
B

L 22780-66 EWT(1)/T JXT(CWW)/WR

ACC NR: AP6008283

SOURCE CODE: UR/0109/66/011/003/0465/0470

AUTHOR: Boloshin, I. A.; Gertsenshteyn, M. Ye.

ORG: none

TITLE: Noise factor of linear receiving antennas in the quantum band

SOURCE: Radiotekhnika i elektronika, v. 11, no. 3, 1966, 465-470

TOPIC TAGS: laser, optical band, noise factor, receiving antenna

ABSTRACT: A generalized concept of the noise factor applicable to both radio and optical ranges is considered; a general formula for noise is:  $P = B \frac{hf}{2} \text{cth} \frac{hf}{2kT}$ , where  $h$  is the Planck constant,  $k$  is the Boltzmann constant, and  $B$  is the power passband. For r-f band:  $hf \ll kT$ ,  $P \simeq kTB$ ; for optical band:  $hf \gg kT$ ,  $P \simeq (hf/2)B$ , which shows that, at "normal" temperatures, the noise amounts to 1/2 quantum per 1 cps of the passband (cf. H. Heffner, Proc. IRE, 1962, 50, 7, 1604). Any noise exceeding this level manifests imperfection of receiving equipment. For example, the excessive noise power of a linear receiving device is:

45  
43  
B

25B

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UDC: 621.396.883.22:621.378.5

L 22780-66

ACC NR: AP6008283

2

$P_{exc} = (F-1)P_{in} = (F-1)B \frac{hf}{2} \coth \frac{hf}{2kT}$  On the above basis, formulas are developed for the noise factor of a linear-amplifier cascade, an equivalent noise generator, two-frequency parametric circuits, a regenerative parametric amplifier, a laser, and a maser (W. H. Louisell et al., Phys. Rev., 1961, 124, 1646). The authors wish to thank A. A. Kulikovskiy and V. I. Tikhonov for their valuable advice and comments. Orig. art. has: 2 figures and 23 formulas.

[03]

SUB CODE: 09 / SUBM DATE: 03Oct64 / ORIG REF: 005 / OTH REF: 004  
ATD PRESS: 4229

Card 2/2 BK

L 40365-66 EWT(1)

ACC NR: AP6014246

SOURCE CODE: UR/0109/66/011/005/0916/0924

AUTHOR: Boloshin, I. A.; Gertsenshteyn, M. Ye.

ORG: none

50  
B

TITLE: Properties of three-frequency parametric circuits 25

SOURCE: Radiotekhnika i elektronika, v. 11, no. 5, 1966, 916-924

TOPIC TAGS: parametric resonance, parametric amplifier, parametric converter, multifrequency amplifier

ABSTRACT: D. K. Adams (IRE Trans., 1960 MTT-8, 274) analyzed 3-frequency parametric circuits in which weak signals of  $f_1$ ,  $f_2$ ,  $f_3$  frequencies have interesting characteristics and potentialities;  $f_1$  is the input-signal frequency;  $f_2 = f_1 - \nu$ ;  $f_3 = f_1 + \nu$ ;  $\nu$  is the pumping frequency. The present article analyzes the most important practical case when  $f_1$  is substantially lower than  $\nu$  and when both side

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UDC: 621.378.01:621.391.82

L 40365-66

ACC NR: AP6014246

frequencies resonate in the same circuit tuned to a near-pumping frequency. It is found that: (1) Such 3-frequency circuits have essential advantages: high input impedance, wide passband, stable amplification equal to the frequency ratio or even higher; (2) In the r-f band, the 3-frequency circuits have no higher noise than the 2-frequency circuits, and are superior to the latter insofar as stability and passband are concerned; (3) In the quantum region, when  $\hbar\omega \gg kT$ , the 3-frequency circuit has higher noise (5 times as high in selective reception, 2 times in homodyne reception) than the 2-frequency regenerative circuit; (4) The 3-frequency circuit has the important advantage of operating with detuned input without impairing its sensitivity. Orig. art. has: 2 figures, 43 formulas, and 1 table.

SUB CODE: 09 / SUBM DATE: 07Jan65 / ORIG REF: 008 / OTH REF: 006

Card 2/2 hs

MYAGKOV. M.I.; BOLOSHIN, M.N.; IGRUNOV. D.V.

Design, construction, and starting operations at Ore Dressing Plant  
No.2 of the Krivoy Rog Southern Mining and Ore Dressing Combine.  
Trudy Mekhanobr no.133:148-177 '63.

(MIRA 18:10)

KARPUNIN, P.M.; BOLOTENKO, V.V.

Use of Azotobacter suis culture for swine fattening. Veterinariia  
40 no.7:58-59 J1 '63. (MIRA 16:8)

1. Direktor Moskovskoy oblastnoy veterinarnoy laboratorii (for Karpunin).
2. Zaveduyushchiy proizvodstvennym otdelom Moskovskoy oblastnoy veterinarnoy laboratorii (for Bolotenko).  
(Azotobacter) (Moscow Province--Swine--Feeding and feeds)

AUTHORS: Roykh, I. L., Boletich, I. F. SOV/ 28-123-1-31/65  
TITLE: The Mechanism of the Vertical Distribution of  $H_2O_2$  Over a Solution (Mekhanizm vertikal'nogo raspredeleniya  $H_2O_2$  nad rastvorom)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol. 126, Nr 1, pp. 116 - 118 (USSR)

ABSTRACT: In a previous paper by I.L.Roykh (Ref 1) it was shown that the photographically active particles separating in the atmospheric corrosion at the surface of metals decrease according to an exponential law with increasing distance. These particles are  $H_2O_2$ -molecules. It therefore may be expected that there also is a vertical distribution for the hydrogen peroxide vapors separating from the solution. In order to prove this the following experiments were carried out: An aqueous solution of hydrogen peroxide of a certain concentration was poured into a bulb and a photographic plate was mounted at a small angle to the surface of the solution. The experimental conditions are discussed. A linear dependence of the blackening  $B$  on its height  $h$  above

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The Mechanism of the Vertical Distribution of  $H_2O_2$  Over a Solution 301/20-120-1-31, '63

the surface of the hydrogen peroxide solution was found as a result of these experiments:  $D = -bh + A$ ; where  $b$  and  $A$  denote constants. The obtained curves result from the averaging of the data of 10 experiments with constant duration of exposure. The aim of the further investigation was the explanation of the mechanism of the vertical distribution of the vapors separated from the  $H_2O_2$  solution. The number of hydrogen peroxide molecules decreases exponentially with the height above the solution. Also by theoretical considerations an equation is found which is analogous to the first written down and experimentally determined equation. The slope of the particles depends on the number of the existing dust particles. With increasing number of the dust particles causing the decomposition of  $H_2O_2$  the slope of the straight decreases towards the axis of the abscissa. In order to prove experimentally the mentioned formula the dependence of  $D$  on  $h$  in the case of dusty air and air partly free of dust above the surface of the  $H_2O_2$ -solution was determined. The performance of the experiments is described. The results of these

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The Mechanism of the Vertical Distribution of  $H_2O_2$  Over a Solution 30V20-120-1-31/63

experiments tend to show the following: The decomposition of the hydrogen peroxide molecules evaporated from the solution which increases with increasing height is connected with the existence of dust particles in the air. Finally the authors thank A.N.Frumkin, Member, Academy of Sciences, USSR, for his mentioning the possibility of the discussed vertical distribution of  $H_2O_2$ . There are 2 figures and 7 references, which are Soviet.

ASSOCIATION: Odesskiy tekhnologicheskii institut im. I.V. Stalina (Odessa Technological Institute imeni I.V.Stalin)

PRESENTED: January 2, 1958, by A.N.Frumkin, Member, Academy of Sciences, USSR

SUBMITTED: November 21, 1957

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The Mechanism of the Vertical Distribution of  $H_2O_2$  Over a Solution SOV/ 20-120-1-31/63

1. Hydrogen peroxide vapors

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S/081/61/000/020/062/089  
B102/B147

AUTHOR: Bolotich, I. P.

TITLE: Investigation of the kinetics of oxide growth on Mg and Al  
by optical polarization

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 20, 1961, 264, abstract  
20I207 (Tr. Odessk. tekhnol. in-ta im. I. V. Stalina, v. 13,  
1960, 21 - 30)

TEXT: The method proposed permits continuous control of the course of the  
corrosion process on a metallic surface and does not distort the course of  
the process. [Abstracter's note: Complete translation.]

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S/020/61/137/001/018/021  
B101/B204

AUTHORS: Roykh, I. L. and Bolotich, I. P.

TITLE: Relation between separated  $H_2O_2$  and the quantity of the oxide molecules formed in the atmospheric corrosion of Mg and Al

PERIODICAL: Doklady Akademii nauk SSSR, v. 137, no. 1, 1961, 126-129

TEXT: It is the purpose of the present paper to prove that the photographic method of studying the atmospheric corrosion of metals by the action of the  $H_2O_2$  formed upon the photoemulsion is physically justified.

For this purpose, a comparison between the results obtained by the photographic method and those obtained by studying thin oxide films in polarized light was carried out in the same way as done by P. Drude (Ref. 3), L. Tronstad, and B. Winterbottom (Ref. 4). For the parameters  $\Delta$  and  $\psi$  of the elliptic polarization of light, the Eq. (1) is written down.

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Relation between separated...

S/020/61/137/001/018/021  
B101/B204

$$L = \frac{\Delta - \bar{\Delta}}{A \left(1 - \frac{1}{n_1^2}\right)}; \quad n_1^2 = \frac{1 + \frac{2\psi - 2\bar{\psi}}{\Delta - \bar{\Delta}} \cdot \frac{\cos^2 \varphi - a}{a' \sin 2\psi}}{\cos^2 \varphi}, \quad (1)$$

$$A = -\frac{4\pi}{\lambda} \frac{\cos \varphi \sin^2 \varphi (\cos^2 \varphi - a)}{(\cos^2 \varphi - a)^2 + a'^2}; \quad a = \frac{1 - \kappa^2}{n^2 (1 + \kappa^2)^2}, \quad a' = \frac{2\kappa}{n^2 (1 + \kappa^2)^2},$$

L = layer thickness,  $n_1$  = refractive index of the layer,  $\lambda$  = wavelength of the incident monochromatic light,  $n$  = refractive index of the metal,  $\kappa$  = absorption coefficient of the metal,  $\varphi$  = angle of incidence of the beam,  $\psi$  = angle between the oscillation plane of the incident polarized light and the plane of incidence. In the case of reflection, not only the amplitudes of the components, but also the phases change:  $\delta_{||} - \delta_{\perp} = \Delta$ .  $\Delta$  and  $\psi$  relate to the pure metal surface,  $\bar{\Delta}$  and  $\bar{\psi}$  to the oxidized surface. For the optical constants of the pure metal surface it holds that:  
 $n = \sin \varphi \tan \varphi \cos 2\bar{\psi} / (1 + \cos \bar{\Delta} \sin 2\bar{\psi})$ ;  $\kappa = \sin \bar{\Delta} \tan 2\bar{\psi}$  (2). In order to

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Relation between separated...

S/020/61/137/001/018/021  
B101/B204

create unique reflection conditions, magnesium and aluminum were polished by means of pastes of the GOI (State Institute of Optics) until the unevennesses no longer exceeded  $0.14 - 0.1 \mu$ . By means of a polarization-goniometer constructed by V. A. Marchenko,  $\Delta$  and  $2\bar{\psi}$  were first determined, and herefrom  $n$  and  $\kappa$  were calculated. Next,  $\Delta$  and  $2\psi$  were determined in the course of the oxidation process, and herefrom  $L$  and  $n_1$  were calculated from (1). ACBA-120A (SVD-120A) lamp, brightness about 5000 stilb, was used for illumination. The following was found with  $\lambda = 5890 \text{ \AA}$ :  $\varphi = 60^\circ$ , for aluminum  $n = 2.37, \kappa = 1.53, n_1 = 1.51$ ; for magnesium  $n = 0.484, \kappa = 6.93, n_1 = 1.7$ . As shown in Fig. 1, there is good agreement between the photographic and optical data of the oxidation kinetics. For the increase of  $L$ ,  $L^2 = 31t$  was found for aluminum; for magnesium  $L^{2.69} = 63t$  was found. The photographic method was checked by determining the dependence of the density of blackening on the concentration of  $H_2O_2$  vapor. Experiments were carried out at  $(20 \pm 1)^\circ C$ , the distance between photographic plate and  $H_2O_2$  solution amounted to 2 mm. The

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